

Appl. No. 10/710,934  
Amdt. dated March 08, 2006  
Reply to Office action of December 12, 2005

**Amendments to the Claims:**

1. (currently amended) A phase locked loop (PLL) system for generating an output  
signal according to a first reference signal, the output signal being used as a reference  
5 clock to write recording data on an optical medium, the PLL system comprising:  
a clock generator receiving the first reference signal and a first frequency-divided  
signal to generate the output signal according to a phase difference between the  
first reference signal and the first frequency-divided signal;  
a phase-shift detector generating a phase adjusting signal corresponding to a phase  
10 difference between the output signal and the first reference signal; and  
a phase-controllable frequency divider connected to the clock generator and the  
phase-shift detector for dividing the frequency of the output signal by a  
frequency dividing ratio to generate the first frequency-divided signal and for  
receiving the phase adjusting signal to adjust ~~the phase~~ the phase of the first  
15 frequency-divided signal;

wherein the phase-controllable frequency divider adjusts the frequency dividing ratio  
according to the phase adjusting signal.

20 2. (cancelled)

3. (currently amended) The PLL system of claim 1 wherein the phase-controllable  
frequency divider comprises a counter for counting the ~~output signal~~ output signal, and  
the phase-controllable frequency divider generates the first frequency-divided signal  
25 according to the count value.

4. (original) The PLL system of claim 3 wherein the phase-controllable frequency

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divider adjusts the count value according to the phase adjusting signal.

5. (original) The PLL system of claim 1 wherein the first reference signal is a wobble signal generated from the optical medium.

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6. (original) The PLL system of claim 5 wherein the phase-shift detector comprises:  
a frequency divider dividing the output signal to generate a second frequency-divided signal; and  
a phase difference detector connected to the frequency divider for detecting a phase  
10 difference between the second frequency-divided signal and the wobble signal to generate the phase adjusting signal.

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7. (original) The PLL system of claim 5 wherein the phase-shift detector comprises:  
15 a first frequency divider dividing the output signal to generate a second frequency-divided signal;  
a second frequency divider dividing the wobble signal to generate a third frequency-divided signal; and  
a phase difference detector connected to the first and second frequency dividers for  
20 detecting a phase difference between the second frequency-divided signal and the third frequency-divided signal to generate the phase adjusting signal.

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8. (original) The PLL system of claim 5 wherein the phase-shift detector detects a phase difference between the wobble signal and a recording synchronization signal  
25 synchronous to the recording data for generating the phase adjusting signal.

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9. (original) The PLL system of claim 5 wherein the optical medium is a DVD-R/RW disk.

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10. (original) The PLL system of claim 5 wherein the optical medium is a DVD+R/RW disk.
- 5 11. (original) The PLL system of claim 5 wherein the phase-shift detector comprises:  
a frequency divider dividing the wobble signal to generate a second  
frequency-divided signal; and  
a phase difference detector connected to the frequency divider for detecting a phase  
difference between the second frequency-divided signal and a recording  
10 synchronization signal synchronous to the recording data to generate the phase  
adjusting signal.
12. (original) The PLL system of claim 5 wherein the optical medium is a DVD+R/RW  
disk, and the phase-shift detector comprises:  
15 an ADIP sync detector generating an ADIP synchronization signal synchronous to  
the ADIP units of the optical medium;  
a frequency divider for dividing the output signal to generate a second  
frequency-divided signal; and  
a phase difference detector connected to the frequency divider and the ADIP sync  
20 detector for detecting a phase difference between the second frequency-divided  
signal and the ADIP synchronization signal to generate the phase adjusting  
signal.
13. (original) The PLL system of claim 5 wherein the optical medium is a DVD+R/RW  
25 disk, and the phase-shift detector comprises:  
an ADIP sync detector generating an ADIP synchronization signal synchronous to  
the ADIP units of the optical medium; and  
a phase difference detector connected to the ADIP sync detector for detecting a phase

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difference between the ADIP synchronization signal and a recording  
synchronization signal synchronous to the recording data to generate the phase  
adjusting signal.

- 5 14. (original) The PLL system of claim 5 wherein the optical medium is a DVD-R/RW  
disk, and the phase-shift detector comprises:  
a land-pre-pit (LPP) sync detector detecting LPP bits to generate an LPP  
synchronization signal;  
a frequency divider dividing the output signal to generate a second frequency-divided  
10 signal; and  
a phase difference detector connected to the frequency divider and the LPP sync  
detector for detecting a phase difference between the second frequency-divided signal and  
the LPP synchronization signal to generate the phase adjusting signal.
- 15 15. (original) The PLL system of claim 5 wherein the optical medium is a DVD-R/RW  
disk, and the phase-shift detector comprises:  
a land-pre-pit (LPP) sync detector detecting LPP bits to generate an LPP  
synchronization signal; and  
a phase difference detector connected to the LPP sync detector for detecting a phase  
20 difference between the LPP synchronization signal and a recording  
synchronization signal synchronous to the recording data to generate the phase  
adjusting signal.
- 25 16. (original) The PLL system of claim 5 wherein the phase-shift detector comprises:  
a physical address detector detecting a physical address on the optical medium; and  
a position difference detector for detecting a position difference between the physical  
address and a logical address of the recording data to generate the phase adjusting  
signal.

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17. (original) The PLL system of claim 5 wherein the phase-shift detector comprises:  
a physical address detector detecting a physical address on the optical medium;  
a logic address detector detecting a logical address of the recorded data on the optical  
5 medium; and  
a position difference detector for detecting a position difference between the physical  
address and the logical address of the recorded data to generate the phase adjusting  
signal.
- 10 18. (currently amended) A method for generating an output signal according to a first  
reference signal, the output signal being used as a reference clock to write recording  
data on an optical medium, the method comprising:  
receiving the first reference signal and a first frequency-divided signal to generate the  
output signal according to a phase difference between the first reference signal  
15 and the first frequency-divided signal;  
generating a phase adjusting signal corresponding to a phase difference between the  
output signal and the first reference signal;  
dividing the frequency of the output signal ~~by~~ by a frequency dividing ratio to  
generate the first frequency-divided signal; and  
20 receiving the phase adjusting signal to adjust ~~the phase~~ the phase of the first  
frequency-divided signal; and  
adjusting the frequency dividing ratio according to the phase adjusting signal.
19. (cancelled)
- 25 20. (original) The method of claim 18 further comprising:  
counting the output signal to generate a count value, and generating the first  
frequency-divided signal according to the count value.

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21. (original) The method of claim 20 further comprising:

adjusting the count value according to the phase adjusting signal.

5 22. (original) The method of claim 18 wherein the first reference signal is a wobble signal generated from the optical medium.

23. (original) The method of claim 22 wherein generating the phase adjusting signal comprises:

10 dividing the output signal to generate a second frequency-divided signal; and  
detecting a phase difference between the second frequency-divided signal and the  
wobble signal to generate the phase adjusting signal.

15 24. (original) The method of claim 22 wherein generating the phase adjusting signal comprises:

dividing the output signal to generate a second frequency-divided signal;  
dividing the wobble signal to generate a third frequency-divided signal; and  
detecting a phase difference between the second frequency-divided signal and the  
third frequency-divided signal to generate the phase adjusting signal.

20 25. (original) The method of claim 22 wherein generating the phase adjusting signal comprises:

detecting a phase difference between the wobble signal and a recording  
synchronization signal synchronous to the recording data for generating the  
25 phase adjusting signal.

26. (original) The method of claim 22 wherein the optical medium is a DVD-R/RW disk.



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27. (original) The method of claim 22 wherein the optical medium is a DVD+R/RW disk.
28. (original) The method of claim 22 wherein generating the phase adjusting signal comprises:
- 5     dividing the wobble signal to generate a second frequency-divided signal; and  
      detecting a phase difference between the second frequency-divided signal and a  
          recording synchronization signal synchronous to the recording data for  
          generating the phase adjusting signal.
- 10   29. (original) The method of claim 22 wherein the optical medium is a DVD+R/RW disk,  
      and generating the phase adjusting signal comprises:  
          generating an ADIP synchronization signal synchronous to the ADIP units of the  
          optical medium;  
          dividing the output signal to generate a second frequency-divided signal; and  
15     detecting a phase difference between the second frequency-divided signal and the  
          ADIP synchronization signal to generate the phase adjusting signal.
30. (original) The method of claim 22 wherein the optical medium is a DVD+R/RW disk,  
      and generating the phase adjusting signal comprises:
- 20     generating an ADIP synchronization signal synchronous to the ADIP units of the  
          optical medium; and  
      detecting a phase difference between the ADIP synchronization signal and a recording  
          synchronization signal synchronous to the recording data to generate the phase  
          adjusting signal.
- 25   31. (original) The method of claim 22 wherein the optical medium is a DVD-R/RW disk,  
      and generating the phase adjusting signal comprises:  
          detecting LPP bits to generate an LPP synchronization signal;

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dividing the output signal to generate a second frequency-divided signal; and  
detecting a phase difference between the second frequency-divided signal and the LPP  
synchronization signal to generate the phase adjusting signal.

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32. (original) The method of claim 22 wherein the optical medium is a DVD-R/RW disk,  
and generating the phase adjusting signal comprises:

detecting LPP bits to generate an LPP synchronization signal; and

10 detecting a phase difference between the LPP synchronization signal and a recording  
synchronization signal synchronous to the recording data for generating the  
phase adjusting signal.

33. (original) The method of claim 22 wherein generating the phase adjusting signal  
comprises:

15 detecting a physical address on the optical medium; and

detecting a position difference between the physical address and a logical address of  
the recording data to generate the phase adjusting signal.

34. (original) The method of claim 22 wherein generating the phase adjusting signal  
comprises:

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detecting a physical address on the optical medium;

detecting a logical address of the recorded data on the optical medium; and

detecting a position difference between the physical address and a logical address of  
the recorded data to generate the phase adjusting signal.

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